Draft - for comments

EMISSIONS TRADING UNDER THE KYOTO PROTOCOL

Issues and Operational Framework

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Emissions Trading

Introduction

The Parties to the UNFCCC reached an agreement on a historic Protocol for reducing greenhouse gases in December 1998 at Kyoto, Japan. In brief, the Protocol contains among other things – realizable emissions targets and timetables for the industrialized countries in conjunction with market-based measures for meeting targets – largely reflecting proposals advanced by the US. The specific set of binding emission targets for GHG reduction below the 1990 levels vary from country to country - 8 percent for EU, 7 percent for the US and 6 percent for Japan with a global average of 5.2 percent. Of the 38 countries included in the agreement, three viz., Australia, Iceland and Norway are allowed to increase their emissions. In order to allow flexibility to Annex I Parties in meeting their commitments, three cooperative mechanisms have been identified:

- Article 6 allows collaboration between two Annex-I Parties through projects in reducing GHG emissions. Though this is popularly referred as Joint Implementation between Annex I Parties, no such phrase is used in the text of the Protocol.
- Article 12 introduces collaboration between Annex-I and non-Annex-I Parties through Clean Development Mechanism (CDM) to generate emission reduction credits.
- Article 17 provides scope for emissions trading between Annex I Parties.

As we move into the fourth session of the Conference of the Parties (COP-4) to be held in Buenos Aires, in November 1998, some of the contentious issues need to be resolved. A point that gains substantial significance at this stage is that while a historic development, the Kyoto Protocol is only one step in a long process. Upfront, the principles based on which long term commitments would be made, needs to be agreed upon. The guiding principles should be differentiated responsibility to undertake measures to meet the objective of the Convention and equity. It is of critical importance for developing countries to strive for strengthening the current commitments of Annex I countries in the period ensuing 2012. Modalities, rules and guidelines - in particular the caps, nature of credits, monitoring, reporting, verification, certification process, and the role and nature of the administrative machinery must be adopted to ensure that emissions trading, joint implementation and CDM operate efficiently and smoothly. These guidelines should be set ensuring transparency, credibility and equity. A related issue is that of addressing the adaptation needs of the developing countries. The Protocol's response to this is inadequate. Further, methodological issues pertaining to sinks viz. how and which human-induced sinks would be accounted for would need to be examined. Another issue of importance is the procedure for ensuring compliance of Annex B countries to the emission reductions agreed under the Kyoto Protocol.

The objective of this paper is to outline the issues and challenges involved in ET and propose responses which would integrate developing country concerns in the search for effective and equitable solutions to global environmental challenges. Before getting on to the discussion on ET, a brief description of various concepts and articles outlined in the Protocol that are relevant from ET point of view is provided here for ready reference.

- Both JI and ET create what are known as 'emission reduction units' (ERUs), whereas CDM generates 'certified emission reductions' (CERs).
- CERs generated through CDM accrue from the year 2000 onwards and they can be banked by the Annex B countries towards meeting their commitments in the first commitment period. This is in contrast to the other flexible mechanisms as the Protocol makes explicit reference to neither exact start time nor the possibility of banking.
- Assigned Amounts (AA) for each Annex B parties are defined as follows. The Protocol has outlined the percentage points by which the emissions of Annex-I parties are to be reduced during the first commitment period (namely, 2008-2012) compared to their 1990 levels (or other base year mentioned in the Protocol for some countries). From this information one can make out the number of tons of carbon equivalent GHGs that these countries are entitled to emit per year during

the commitment period. Multiplying the yearly allowed emission level by 5 (the number of years in the first commitment period) would result in assigned amounts for the country. These AA are the basis for both determining compliance and for initiating a trading system for Annex-I countries.

- Articles 3.10, 3.11, 3.12 and 3.13 provide rules for accountability under the flexible mechanisms.

With this background we now turn to detailed discussion on ET. The structure of the paper is as follows: The context of emissions trading is discussed in the next section. This is followed by description of the mechanics of ET. In this section issues such as who, what, when, and how ET could take place, liability, monitoring, reporting/accounting and review are discussed. The section also highlights the issues that have significant importance with ET, namely compliance and adaptation. Section 4 outlines some of the contentious issues related to ET and finally section 5 presents the proposed framework of ET.

4.0 Context of Emissions Trading

In light of long-term commitments which have to be made, the guiding principles for the same needs to be determined. The two principles, in our opinion, would be *differentiated responsibility in the ability to address climate change* and *equity*. Based on the two above principles is the *Convergence Corridor*. What this helps us determine is the entitlements or rights.

Though economists have advocated for long the concept of trading as an efficient mechanism to address the greenhouse gas (GHG) emission abatement issue, the conceptual difficulty associated with determination of entitlements has been major obstacle for its implementation.

One of the often-argued basis to address entitlement issue has been *per capita*. However, there have been a number of arguments, from developed and even developing countries, against such basis. Since the emission reductions targeted in the first commitment period do not have any scientific basis, it might not be possible to bring in the entitlements based on per capita unless the Parties agree for re-negotiation of the Protocol. The Protocol is consistent to the extent that the trading is allowed between Annex I Parties only, who have agreed for emission reductions in the first commitment period. Given this background, as argued more elaborately in section 3.1, bringing non-Annex I Parties into the trading is likely to result in perverse situations. Keeping these in view the entitlements for Annex I Parties are defined in a round about manner in the Protocol. The assigned amounts described in the above section define such entitlements. The rest of the report assumes that such entitlements are agreeable to all the Parties. However the entitlement issue has been flagged as a contentious issue in section 4.

5.0 Mechanics of Emissions Trading

3.1 Trading Possibilities

The Kyoto Protocol addresses GHG emissions trading in four different articles. Article 17 explicitly authorizes parties with GHG emissions limits to use emissions trading to fulfil their commitments. Article 6.3 provides for the trading of emissions reduction units created as a result of emissions reduction projects under JI. Article 3.10 and 3.11 set out the accounting system by which parties' emissions performance and their trading activity are to be measured. Finally, Article 4 provides a mechanism through which a group of parties that adopts a collective target, or, as some have referred to it, a 'bubble' or 'umbrella' target, can meet their collective target through trading, joint projects or differentiated national reduction targets, according to their sovereign wishes.

Kyoto Protocol has often been considered to be offering the following possibilities under emissions trading.

a) Type 1 of ET: trading in 'parts of AA' of allowable emissions
b) Type 2 of ET: trading in 'CERs'

Under type 1 any Annex B Party may transfer 'parts' of its total AA of GHG emissions. They are referred as ET under Article 17. Also, under type 1, Annex I parties may transfer, or authorize other legal entities to transfer, AA in connection with individual projects undertaken in other Annex I parties where such projects yield emission reductions. Such transfers result in the identical accounting consequences as ET under Article 17 described above, but are referred to as JI.

Under type 2, any Annex I Party may transfer to another Annex I Parity CERs obtained through cooperative project in non-Annex I countries. However a close look at the Protocol do not support this possibility. Articles 12.3 (b) and 12.10 state:

Article 12.3 (b): Parties included in Annex I may use the certified emission reductions accruing from such project activities to *contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3*, as determined by the Conference of the Parties serving as the meeting of the Parties to this Protocol.

Article 12.10: Certified emission reductions obtained during the period from the year 2000 up to the beginning of the first commitment period can be *used to assist in achieving the compliance* in the first commitment period.

These articles clearly show that the Parties can use CERs only for meeting commitments. The articles of the Protocol, which describe the accounting aspects further, highlight the above point.

Article 3.12: Any certified emission reductions which a Party acquires from another Party in accordance with the provisions of Article 12 shall be added to the assigned amount for the *acquiring Party*.

While describing about the accounting practice of ERUs from JI and ET the Protocol has provided rules for both 'acquisition' and 'transfer' (Articles 3.10 and 3.11, respectively). However as shown in Article 3.12 for the case of CERs only the accounting rule for 'acquisition' has been provided. Hence the Protocol does not allow transfer of CERs between Parties with emission commitments (i.e., Annex B Parties).

Also it may be noted that trading in CERs between Annex B Parties goes against the fundamental principles of equity. CERs are nothing but the emission rights of developing countries 'acquired' by Annex I countries. It is rather perverse to consider and allow the possibility of trading these 'rights' belonging to one Party by another Party.

However, in case the structure of CDM evolves in such a way that the CERs are distributed between Annex I Party enterprise, non-Annex I Party enterprise and non-Annex I Party government, then the restriction on sale of CERs would not be applicable to the CERs belonging to the non-Annex I Party enterprise and government.

3.1 What Gases to Trade

As the trading is likely to take place in AAs, in principle all gases that are used in determining AAs could be traded. In light of the fact that the uncertainty levels in estimation of GHG emissions vary across countries and also because the methods to report this vary, it is critical that the gases that are to be traded are scaled by the uncertainty value reported in national GHG inventory report. The IPCC GHG Inventories programme has already initiated efforts to address this. The objective is to:

* To examine ways of managing and communicating uncertainty and other aspects of inventory quality;

* To begin developing a framework for managing/communicating uncertainty and other aspects of inventory quality;

* To establish priorities for future work on good practice in national GHG inventory preparation and development, including managing and communicating uncertainty.

3.1 When to Trade

As mentioned in the first section, the Kyoto Protocol does not specify the exact start date for trading. Article 3.10 and 3.11 imply that trading could begin as soon as there are AA. The Protocol has outlined AAs for the first commitment period (2008-2012). Hence trading could be begin anytime after 2008. The trading activity could take place either at the end of each year, or at the mid-point of the budget period, or at the end of the budget period.

3.2 How to Trade

Main features of the proposed CO_2 trading market include:

- At the international level only Parties could be allowed to trade, while within national boundaries it is up to the discretion of the individual Parties to allow firms, individual entities, and others to participate in domestic trading.
- The UNFCCC Secretariat (or any other organization designated by it) functions as a clearinghouse. The tasks of a clearinghouse include, facilitating futures trading, acting as the ultimate guarantor, ensuring prompt and proper trade settlements and the financial integrity of all contracts traded, controlling risk[1] and assuring timely and proper settlement of all trades, information dissemination on price and volume of trade.
- The trading takes place in an international exchange, which is separate from the

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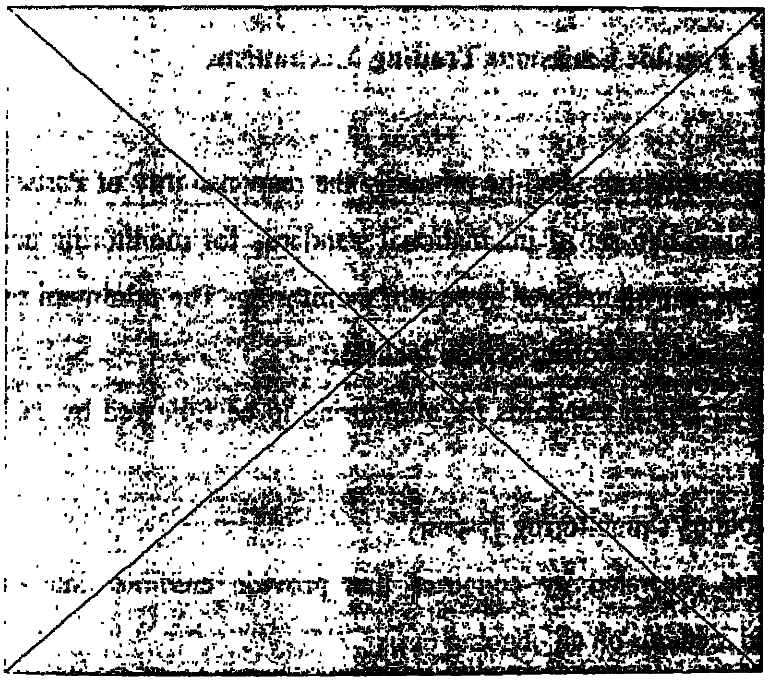
[1] This is done by setting margins, which is a good faith payment required by the exchange and clearinghouse to help ensure that neither Party defaults on contractual obligations.

clearinghouse. This exchange could be an electronic market place via computers to place the order, provide specifications, clearance or settlement procedures. This international exchange could be set up afresh. However, existing national commodity exchanges could be used for conducting CO_2 emissions trading within national boundaries.

- The characteristic feature of trading in CO_2 emission credits (i.e., assigned amounts) is that the deal could only be squared at the end of the budget period. Hence, the appropriate trading scheme would be "futures[2] trading". This would prevent the cases of buy-and-run or sell-and-run.

The figure below illustrates the possible transaction mechanism:



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[2] The contract of such trading would state that the trade is conducted and delivery shall take place on a standardized expiration date.

Disseminates information on trade volume, price etc.

Figure 1. Possible Emissions Trading Mechanism

3.1 Monitoring

Monitoring of GHG emissions shall be primarily the responsibility of Parties. The COP can provide a minimum set of international standards for monitoring and each Party can then develop its own national system of monitoring. The minimum set of functions of the international monitoring system includes:

- Designing a set of international standards for monitoring to be followed by each Party
- Initial approval of a country's monitoring system
- Review of the reports generated by countries that provide credible data on monitoring results and methods on an ongoing basis
- Periodic inspection to assure proper functioning

3.1 Reporting

Current IPCC emission inventory guidelines include: common reporting format, documentation standards, self-verification tasks and reporting uncertainty levels. Some of these, for e.g., uncertainty levels and minimum verification tasks undertaken, can be further standardized while developing the reporting procedure for the Annex I Parties. Given that Annex I Parties have commitments, it is important to undertake the following measures to revise the IPCC Inventory guidelines to mainly address and report:

- Trade of commodities/electricity to capture carbon leakage's
- Differences between natural and anthropogenic sources and sinks in land-use change and forestry and in agricultural soils should be clearly established.

For proper tracking of ET activity, the Annex I Parties may be asked to submit inventory and projections of their emissions on an annual basis during the first commitment period. National datasystems would need to be strengthened in such a way that the time lag is only that of a year. Inventories, projections and policies and measures in place should be submitted annually while all other parts of the national communications could be submitted in a 2-4 year interval.

Each Annex B Party should report the following items for each year of the commitment period:

(a) assigned amount (note that this would be one fifth of the total assigned amount for the 5 year commitment period),
(b) actual emissions,
(c) domestic offsets (which could be activities like afforestation etc., undertaken in the country),
(d) exported parts of assigned amounts, and
(e) imported parts of assigned amounts and CERs.

From these, year-end (and end of commitment period) balance could be deduced as:

(a) - (b) + (c) - (d) + (e).

3.1 Review

Currently, the UNFCCC Secretariat jointly with other international organizations and nominated experts from developed and developing countries undertakes an in-depth review of the national communications. With changes in reporting requirements as has been identified in the earlier section, an in-depth review of GHG inventories, projections and policies and measures undertaken for GHG reduction could be undertaken in 2009 and 2011. As it might not be possible to carry out technical verifications, the verification procedure could concentrate on the key assumptions and changes in the national communication (e.g., changes in base year data, changes in emission factors etc.) and this would facilitate flagging areas where compliance problems may occur.

For example, the review of the second national communications of Annex I

Parties reveal that the baseyear (1990) data for a number of Parties has changed. As the Protocol defines assigned amounts in terms of reductions from the baseyear, change in baseyear data would have substantial impact on the trading activity. Certain guidelines are essential to ensure verification and compliance.

Verification would be undertaken subsequent to the submissions of national communications in 2012. The responsibility of carrying out this activity could be with institutions identified for such purpose jointly with UNFCCC Secretariat and the teams different from those who carried out the IDRs in each country. The purpose of this exercise would be for checking on compliance.

3.2 Accounting Procedure

As mentioned above Article 3 sets out the accounting system by which parties' emissions performance and their trading activity, are to be measured. It is envisaged that together these provisions themselves provide much of the structure needed to sustain international GHG emissions trading system.

Article 3.10 and 3.11 render trading under Article 6 and 17 virtually indistinguishable for purposes of accounting for parties trading activities and fully establish the unified mechanism for ensuring that all traded emissions reductions are 'surplus' and can substitute for other emissions reductions.

Though on the face of it Articles 3.10 and 3.11 appear sufficient enough to make sure that the total emissions remain within the fixed targets, it is possible that there is an excess emission, if any Annex B party fails to stay within its target. That is, the double-entry book-keeping mechanism established by 3.10 and 3.11 produces a proper result (of the total emissions being within the total Annex B emission commitment) only if the transferring party's actual emissions do not exceed its assigned amount after subtracting the amount transferred.

This brings the issue of compliance to the forefront. It may be noted that 'currency' of trading under the Protocol is identical with that of compliance.

3.3 Compliance Procedure

The Kyoto Protocol appropriately observes that, 'ultimately, the only consideration germane to determining a party's compliance is whether its actual cumulative GHG emissions match its assigned amount as adjusted by emissions trading'. This should provide the appropriate guidelines in designing the compliance procedure. First, a brief discussion is provided here on the national and international compliance experiences.

National and International experiences in similar agreements

National

a) Examples of successful emissions trading in the past include acid rain program of the US. To combat acid rain, the US Congress in 1990 amended the Clean Air Act to reduce emissions of SO_2 from thermal electric power plants. The 1990 amendments held each plant *legally accountable for meeting a specified total emissions limit.* Trading along with this feature has made the SO_2 program one of the most successful of US environmental policy initiatives. Non-compliance with SO_2 emission levels under the Clean Air Act Amendments of 1990 results in a penalty of US$ 2000 per ton (plus inflation). Further, in the case of the acid rain program, non-compliance would imply that its assigned amounts for the following 5-year compliance period will be reduced by the amount by which its emissions exceed the assigned amount.

b) A tax on past emissions is charged for non-compliance to CO_2 emissions reduction in Denmark, where firms/enterprises have voluntary agreements for reduction with the government.

International

a) The Implementation Committee of the Montreal Protocol (MP) is a standing committee and has a role in general assessment of Parties compliance under the MP. Its responsibilities include evaluation of performance and general monitoring. This is the first international agreement to include an operational compliance system, including penalties for non-compliance. The key features of compliance are, 1. focus on dispute avoidance and not dispute resolution; 2. possibility of relying on "harder" approaches once a Party is deemed out of compliance. This is dealt with through linkages to the Multilateral Fund and the power to revoke privileges and invoke penalties for non-compliance.

b) A model for an effective review and compliance process is that of the International Labor Organization. The Committee of Experts conducts an in-depth review of national reports and identifies compliance problems. A standard grace period, that can be extended if the country has undertaken steps leading to compliance, is given. While strongest action is "blacklisting", initial steps include warnings. The low ratio of blacklisting to warning indicates that the system has been effective in limiting the frequency of serious violations.

b) While MP focuses on dispute avoidance, dispute resolution is best developed under GATT. Here the disputants can initiate the formation of a panel of experts to investigate the claims and make a judgement based on GATT principles. In practice, negotiations is a major feature of GATT resolution - most disputes are resolved through the system before as final panel report is adopted and the threat of convening a panel is frequently sufficient impetus to force parties to negotiate. GATT panels can authorize retaliation but this has only occurred once.

c) The 1994 Sulfur Protocol has a framework to address non-compliance (Implementation Committee has been established). However, this Protocol, has not come into force.

Based on these past experiences the subsequent COPs have to design proper mechanism to guarantee compliance. There could be a number of alternative mechanisms to choose from and these are summarized here. The general principle of compliance procedure could be adopting a soft approach with the possibility of moving towards hard approaches. The soft approaches could include -

- Assisting the Parties in the preparation of a plan toward compliance
- Permitting a grace period and extension of the same if the Party shows signs of getting on to the compliance path
- Warnings[3]

The hard approaches could include

- Formation of a panel of experts to investigate the claims[4]
- Automatic deduction of assigned amounts in tune with the non-compliance for the subsequent commitment period
- In addition to the above automatic deduction, one can also subtract from the assigned amount some units to account for the 'damage' done by a party's non-compliance in a particular period
- Loss of trading rights

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[3] Similar to the procedure adopted by the International Labour Organization.

[4] Similar to the procedure under GATT.

- Non-compliance fee (which could be used in the adaptation fund)

3.1 Liability

If the compliance mechanisms were strong then seller liability would be sufficient to ensure proper accountability. Strong enforcement environment provides incentives for those creating the credits to ensure their validity, and it reduces risk and uncertainty in trading. However in the absence strong compliance procedure, along with seller liability buyer liability program is needed to assure that tainted acquired assigned amounts could not be used by the buyers to satisfy their emission reduction commitments. For the present, it appears that a combination of seller and buyer liability would be an effective approach. In this context it may be noted that the emission reduction units generated through JI have to some extent buyers' liability imbedded in them.

3.2 Adaptation Fund

A related issue is that of addressing the adaptation needs of the developing countries. The Kyoto Protocol's response to this is inadequate and the subsequent COPs should ensure creation of a fund for adaptation needs. This fund, besides receiving periodic contributions from developed country Parties, should also draw a contribution from each activity undertaken within all the cooperative mechanisms of the Protocol and not confined to just CDM (as it is outlined in the Protocol). In fact, the principle of using some of the financial gains from flexible mechanisms to help non-Annex I countries in adaptation is more appropriate for ET than for CDM.

If the Annex I Parties are making use of the flexibility options to meet their commitments, it is a benefit for them for which they should be ready to pay some price. Thus, it appears appropriate that a part of the proceeds from each mechanism (not only the CDM) should be collected and used for addressing vulnerability and adaptation in the developing countries. In addition to this a fee for non-compliance could be charged which would also flow into the adaptation fund.

The GEF Implementing Agencies could implement these projects as well. The Executive Board of CDM would function as one for the adaptation projects as well.

5.0 Contentious Issues Related to Emissions Trading

There are number of issues related to ET that are still greatly debated and only with detailed discussions among the Parties these issues are likely to be resolved. Here a brief discussion is made on a number of such issues.

1. Entitlements and the issue of equity

   This issue has been discussed in section 2 already. The developing countries have been arguing for a more equity based determination of emission entitlements. The way in which entitlements are defined in the Protocol is to some extent consistent with the manner in which trading is defined there. Any modification in the entitlement would be possible only if the Protocol could be re-negotiated. Despite its many short comings the Kyoto Protocol is a definite step-forward by the mankind in its pursuit to address the climate change problem and re-negotiation of the Protocol would further delay 'action' by the Annex I Parties, which might not be in the interest of all the Parties.

2. Emissions trading and economies in transition (EITs)

   The Protocol puts very minimal targets on the countries belonging to the erstwhile Soviet Union. As most of these countries are facing structural changes in their economies, a general slow down in their economic activities and hence their GHG emissions is projected. These countries, thus, are likely to offer a great opportunity, known in the climate change parlance as 'hot air', for other Annex I Parties to trade and meet their emission commitments. Table A1 shows the potential of 'hot air' in meeting the emission commitments of various OECD regions. The estimates are based on emission projections made by International Energy Agency (IEA, 1996) and Energy Information Administration (EIA, 1998). Certain restrictions on the extent to which these countries could be allowed to take part in the emissions trading are essential to ensure that the Annex I Parties carry out at least some emission reduction activity domestically.

3. Cap on emission reduction through trading

   The above discussion on 'hot air' raises the related question of caps. It is not clear what percentage of the emission reduction target could be met through ET, and other flexible mechanisms (namely, JI and CDM). The principle logic behind the caps is to ensure domestic action by the Annex I Parties. However it is rather difficult to suggest quantitative caps on each individual mechanisms and/or sum total of all mechanisms. The debate on short term efficiency versus long-term costs has a crucial bearing on the caps. Participation of both developing and developed countries in the emission reduction effort is essential and hence a cap that has equal influence on the participation seems appropriate. Keeping these principles in view the following caps could be considered on the flexible mechanisms in general and emissions trading in particular.

a. To ensure domestic action an overall cap on flexible mechanisms is needed. Table A2 shows the possible emissions from OECD countries under 'energy saving' scenario, developed by International Energy Agency (1996). From the table it appears that OECD countries could meet about 35 to 55% of their emission reduction commitments through domestic actions. Hence assuming that on average 40% of the emission reduction commitments could be met through domestic actions, an overall cap of 60% on all the flexible mechanisms could be imposed.

b. To ensure that 'hot air' is not used by one single country, a cap ranging from 15 to 30% on the net emission reduction commitments (i.e., emission reduction commitments net of own actions).

c. Of the three flexible mechanisms, JI and ET are going to be between Annex I countries only, while CDM would be between Annex I and non-Annex I countries. If equal opportunity were to be given to both Annex I and non-Annex I countries, a cap of 50% each on JI/ET and CDM could be imposed.

Note that depending on (b) and (c), the contribution of own actions in meeting emission reduction commitments could increase from 40%.

Despite all these restrictions on hot air usage and caps on flexible mechanisms, if certain strategic 'bubbles' were formed then most of the hot air would get internalized. Thus, if for example, the US and Former Soviet Union strategically align themselves and declare a joint emission reduction commitment, then a bulk of 'hot air' gets internalized.

Developing country participation in the emissions trading

There has been a growing reference to 'meaningful participation' by the developing countries in addressing the global climate change problem, particularly from the United States. While some from the developing countries view their participation in CDM could be considered as their contribution towards GHG emission reduction, developed countries are of the view that the developing countries should adopt voluntary emission reduction commitments. The arguments that are cited in favor of voluntary commitments are the potential gains that the developing countries could obtain from their participation in emissions trading. It may be noted that as per the Protocol only the countries with emission reduction commitments could participate in the emissions trading and hence voluntary commitments become an essential pre-requisite. Despite the possible gains that the developing countries could make from their participation in emissions trading it is not clear to what extent adopting voluntary commitments would be advantageous.

4.0 Conclusions

The project-based mechanisms, namely, JI and CDM, are likely to have relatively high transaction costs compared to emissions trading. Thus, the Annex-I Parties are likely to use emissions trading more than the other two flexible mechanisms in meeting their emission reduction commitments[5]. Hence development of sound framework for emissions trading is essential. This paper outlines one such framework and flags out a number of contentious issues that need further negotiations in the forthcoming Conference of Parties.

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[5] It may be noted that project-based mechanisms (CDM/JI) may send price signals as the *real* marginal abatement costs to reduce GHGs emissions to the emissions trading market. Especially as CDM projects can start from the year 2000 onwards, the results of these projects provide useful information to roughly estimate the permit price before the emissions trading market starts. Thus there exists a mutual dependence between market-based and project-based flexible mechanisms.

Proposed Framework for ET

The following table provides the framework being proposed for ET. This table summarizes the bulk of the discussion in the above sections.

	First commitment period	Remarks
Gases	All the greenhouse gases to be covered, after scaling them according to the uncertainty levels.	Some extent takes care of uncertainty. IPCC - efforts to bring out elaborate guidelines on issues like defining uncertainty levels.
Cap	1. At least 40% of emission reduction commitments are to be met through domestic action 2. Of the remaining commitments 15-30% could only be met through the use of 'hot air' 3. ET and JI together could account for 50% of emission reduction commitments net of domestic actions; and CDM could account for the remaining 50%.	Principles: (a) promote domestic efforts (b) avoid fluctuations arising from any mechsnism being a non-starter and (c) providing equal opportunity for developing and developed country participation in cooperative agreements to protect the climate.
Transaction of participants	Legal entities and governments (at the International level).	
Timing	To begin from year 2008.	
Monitoring	(1) Minimum international standards for monitoring, (2) National system of monitoring.	Primary responsibility - Parties.
Reporting	Inventory and projections, policies & measures should be submitted annually.	Allow only a year's time lag in the data presented on inventory. Current IPCC inventory guidelines could be standardized for e.g. uncertainty levels, minimum verification tasks undertaken, and definite guidelines for Annex I Party reporting of inventories.

Review	In-depth Reviews to be conducted by the UNFCCC Secretariat for inventories, projections and policies and measures in 2009 and 2011 during the budget period. National communications to be reviewed after the compliance period. This also helps identify compliance problems.	Responsibility with UNFCCC Secretariat with assistance from external experts and institutions like IPCC and other international organizations. Technical verification may not be possible. Instead check assumptions, inventories and changes in the reporting in the national communications (e.g. changes in base year data, changes in emission factors etc)
Verification	This is to be undertaken after the budget period.	Independent bodies to be identified by UNFCCC.
Market mechanisms	Information clearinghouse	UNFCCC Secretariat to function as the information clearinghouse.
Link with JI/CDM	ERUs can be traded just the same way as AAs; however Annex I Parties can not sell the CERs that they acquire from non-Annex I Parties.	The basic principle is that no Party can sell the 'emission rights' of another Party. If Annex I Parties sell the CERs that they acquire from non-Annex I Parties then it amounts to violation of this principle.
Compliance	Soft approach with the possibility of moving towards hard approaches[6]. Soft - like assisting in the preparation of a plan toward compliance, warnings. Hard- formation of a panel of experts to investigate the claims and loss of trading rights, non-compliance fee, repay the atmospheric debt.	1. Responsibility - SBI and ultimate responsibility with COP. 2. Approaches based on soft- principle of dispute avoidance. Hard - principle of dispute resolution.
Liability	Combination of seller and buyer liability is preferable.	With strict compliance measures, seller liability alone would be sufficient; however in the absence of such strict measures, a combination of seller and buyer liability would be necessary.
Adaptation	Funds to be apportioned from all mechanisms and a non-compliance fee to levied which would be pooled in for funding adaptation projects in non-Annex I countries.	More appropriate for ET than CDM. The GEF Implementing Agencies could implement these projects as well. The Executive Board of CDM would function as one for the adaptation projects as well. However, their role would be limited to overseeing the IA's work as well as be involved in the policy aspects (eg preparing project eligibility criteria).

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[6] Similar to the Non-Compliance Procedure under the Montreal Protocol.

APPENDIX

Table A1. Contribution of "hot-air" in OECD emission reduction requirements

(in MMTC)

Region	1990 Emissions	2010 Emissions	Target emissions in 2010	Required emission reductions	Contribution of hot-air in emission reductions (%)
Based on International Energy Agency (1996) Projections					
OECD - NA	1537	1996	1430.5	565.5	9.0
OECD - WE	937	1098	863	235	21.6
OECD - Pacifi	371	531	361	170	30.0
OECD - Total	2845	3625	2654.5	970.5	5.2
EE and FSU	1204	1133	1184	-51	-
Based on Energy Information Administration (1998) Projections					
OECD - NA	1550	2105	1441.5	663.5	29.6
OECD - WE	971	1101	893	208	94.5
OECD - Pacifi	364	461	354	107	> 100.0
OECD - Total	2885	3667	2688.5	978.5	20.1
EE and FSU	1290	1072	1268.5	-196.5	-

Table A2. Potential emission reductions through own actions

(in MMTC)

Region	1990 Emissions	2010 Emissions	Target emissions in 2010	Required emission reductions	Share of own actions in the overall reduction requirement[a] %
OECD - NA	1537	1795	1430.5	364.5	35.5
OECD - WE	937	970	863	107	54.5
OECD - Pacifi	371	461	361	100	41.2
OECD - Total	2845	3226	2654.5	571.5	41.1

Note: The scenario presented here is based on the 'energy savings' projections of IEA, 1996.

[a] In comparison to the BAU scenario of IEA, 1996 shown in Table A1.

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